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United States Department of Agriculture,

BUREAU OF ENTOMOLOGY,

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THE COMMON SQUASH BUG.

(Anasa tristis DeG.)

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GENERAL APPEARANCE AND METHOD OF WORK.

The best known of all the insects which infest squashes and pumpkins is the common squash bug, *Anasa tristis* DeG., otherwise known as stink bug from its disagreeable odor. It is also called black squash bug to distinguish it from that other enemy of cucurbits, the so-called "striped bug" (*Diabrotica vittata* Fab.).

The species is a member of the heteropterous family Coreidæ. The adult bug, shown at fig. 1, *a*, is of large size, nearly three-fourths of an inch long. It is dirty blackish brown above and mottled yellowish beneath. Its wings, as with other insects of its suborder, are folded diagonally across its back, leaving a large

triangular space, the scutellum, between. On the under side is its haustellum or beak (see *b*), by means of which it sucks up the juices of the plants on which it feeds. The sexes may be distinguished by the external genital organs, *c* of the illustration representing the male and *d* the female.

The injury wrought by this bug is not confined to squash and pumpkin, although these plants, particularly the former, suffer most, as records are not wanting to show at least occasional injury to other cucurbits. This insect is more or less harmful during its entire active existence, from the time it leaves the egg till its demise. When numbers attack a plant together it is soon exhausted, and its death

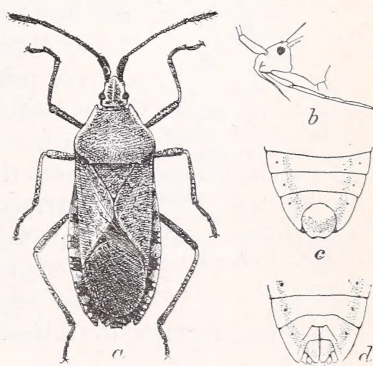


FIG. 1.—*Anasa tristis*: *a*, Mature female; *b*, side view of head, showing haustellum; *c*, abdominal segments of male; *d*, same of female. *a*, Twice natural size; *b*, *c*, *d*, slightly more enlarged. (Author's illustration.)

often follows. It is a well-established fact that it is not alone the extraction of the juices that destroys a plant, but that, whenever the bug punctures or "stings" a leaf-stalk, it injects a drop of liquid, supposed to be its saliva, which has a poisonous effect on the plant, causing the death of the cell tissue about the puncture. It attacks also the leaves and occasionally the fruit of cucurbits. Still another form of injury is due to the insect's acting, although perhaps not to a very great extent, as a transmitter of the insidious bacterial disease, *Bacillus tracheiphilus* Erw. Sm.

Attack on young plants is much more serious than on older and larger ones, a few punctures sometimes being sufficient to cause their death. Soon after being punctured the tips and leaves wilt or droop and eventually die. Later in the season the bugs do little harm, as the vines by this time have acquired sufficient vigor to resist attack.

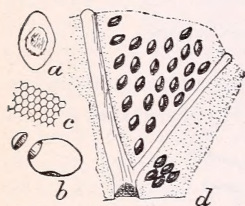


FIG. 2.—Eggs of *Anasa tristis*: a, From below, showing point of attachment; b, from side, showing place of escape of nymph; c, sculpture of egg; d, egg cluster. a, b, About five times natural size; d, one-fourth enlarged; c, greatly enlarged. (Author's illustration.)

Injury by this squash bug is sometimes exaggerated in reported cases, the damage observed being often due to other insects which are less apt to be noticed. We seldom find fewer than three or four forms of injurious insects present upon an infested plant at the same time, and this squash bug on account of its large size is more apt to attract attention than are the much smaller but more destructive striped cucumber beetle and melon aphids; the squash-vine borer, by reason of its secluded manner of living, concealed within the vines, is not so readily detected, and the result is that

the squash bug receives the blame for the depredations of the others.

DISTRIBUTION.

The common squash bug is known throughout practically the entire United States, being particularly abundant east of the Rocky Mountains, where it ranges from Maine to the Gulf States. It is also recorded westward to Colorado, New Mexico, Arizona, and California. Judging by published records and the correspondence of this office it is most injurious in the southern portion of New England, in New York, Ohio, Indiana, and Michigan, although, of course, it is more or less harmful in many other States. In certain of the other States which it is known to inhabit it is less troublesome, except occasionally in small gardens. This species also occurs in Canada and is recorded from British Honduras and Mexico.¹

¹ See W. L. Distant, Biol. Cent.-Amer., Rhynchota, p. 139, for distribution and bibliography.

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Injury may begin soon after the first sprouting of the plants, or after the plants have made some considerable growth, and may continue until their death or the departure of the bugs to places of concealment for hibernation. The plants are first attacked by the hibernated bugs. Soon after their first appearance, which varies according to temperature and locality from early spring in the South to late in June farther north, the insects copulate and begin the deposition of their eggs, attaching them by an adhesive secretion to the leaves in masses of three or four to forty or more. The eggs, shown in the illustration (fig. 2, *a*, *b*), are metallic brown or bronze in color and flattened on three sides. They are laid usually on the under side of a leaf, but not infrequently also on the upper side; often in regular rows, but sometimes less regularly; and either separated as in the larger mass at *d*, or more closely crowded together as in the smaller mass. They are whitish when first laid, but soon change to bronze, and hatch in from eight to thirteen days into small green and black creatures, which resemble somewhat the mature insects, but differ in having proportionately longer legs and antennæ. These make their escape from the egg-shell through a little round hole cut out of one end, as shown at *b*. In this period of their existence,¹ which is known as the first nymph stage (see fig. 3, *a*), the insects live in colonies, at first remaining close together upon the leaf near where the eggs were laid, but later congregating about the bases of the leaf-stalks or hiding, together with individuals of the more advanced stages and the parent insect, under near-by clods or rubbish, or in any convenient retreat, and coming forth toward dusk in search of food.

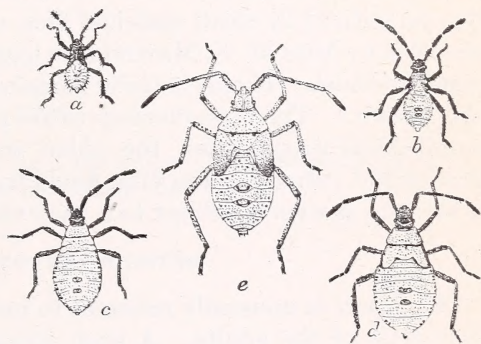


FIG. 3.—*Anasa tristis* nymphs: *a*, Newly hatched; *b*, second stage; *c*, third stage; *d*, fourth stage; *e*, fifth stage. All about twice natural size (author's illustration).

The nymphs cast their skins five times before reaching the mature condition, increasing their growth after each molt. Three days after hatching, the nymph, having attained a larger size, molts and assumes the second stage, which is illustrated at *b*. In this stage it lives eight or nine days before undergoing the next molt. The third stage, illustrated at *c*, requires seven to eight days, and the fourth six days. The

¹ In the District of Columbia the bugs have been observed to appear first about the second week in June.

fifth stage, shown at *e*, is passed in eight days, when the fifth and final molt takes place and the insect appears as a full-sized bug. In its last stage the insect continues to feed, but with the disappearance of its food supply, caused by the dying or clearing away of the crop on which it has fed, it seeks shelter in any convenient rubbish, under boards, stones, old vines or similar vegetation, or under the loose bark on dead trees, or in cracks of barns and outhouses, and here passes the winter. Hibernation in the District of Columbia, where the periods above mentioned have been observed by the writer, begins some time in September.

NATURAL ENEMIES.

The disgusting odor of this insect, as well as its habit of remaining hidden during the day in various places of concealment, serves doubtless in a great measure to protect it against rapacious birds and some sorts of insects. Nevertheless it falls a victim to certain parasitic enemies, among which a tachinid fly,¹ which appears at about the same time as its host, deposits its eggs upon and develops within the living body of the adult insect, is the most abundant and conspicuous. It is also parasitized by small chalcidid flies, one species of which has been recorded by Miss M. E. Murtfeldt to have destroyed as many as 80 per cent of its host. Three chalcidid parasites of the eggs of this insect are also known.² The bugs themselves are reported sometimes to develop cannibalistic propensities, the older ones killing the younger and weaker and extracting the vital fluids from their bodies. In addition to this the species is subject to a bacterial disease.³

METHODS OF CONTROL.

This insect is unusually resistant to insecticides, and this is particularly true of the adults. A wash strong enough to kill the mature insect will at the same time destroy the vines. This renders it necessary to proceed against it by hand and by cultural methods.

Hand-picking early in the season.—A lookout for the bugs should be kept early in the season, and these as well as the eggs should be picked off or cut away with shears and destroyed. The eggs, on account of their large and conspicuous appearance when deposited in clusters while the vines are young, are readily seen, and the grower should make a practice at the beginning of each season of going over the vines every few days. Such young as may hatch in spite of these precautions may be killed by kerosene emulsion applied upon their first appearance.

Trapping the bugs.—The bugs may also be trapped by placing on the ground at intervals through the garden, boards, shingles, pieces

¹ *Trichopoda pennipes* Fab.

² *Hadronotus anasæ* Ashm.; *Ooencyrtus anasæ* Ashm., and *Eupelmus reduwii* How.

³ *Bacillus entomotoxicon* Duggar.

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of bark, or similar material, to which the insects will be attracted for shelter. Here they should be looked for and destroyed every morning or so during the early season.

Protection to cucurbits other than squash, and perhaps pumpkin, can be secured by growing these plants with the others to serve as trap crops. Attack will thus be centered upon a few plants where the insects can be the more readily controlled.

Other methods.—A number of the remedies in use against the striped cucumber beetle¹ and other insect enemies of cucurbits will assist in the destruction or control of this species. Among these are the protection of young plants with coverings, the use of repellents, such as land plaster or gypsum saturated with kerosene or turpentine, the planting of an excess of seed to distribute attack, the stimulation of the growth of the plant by manures or other proper fertilizer, and lastly, clean cultural practice. If the precaution be taken to gather the vines as soon as the crop is harvested and burn them, many bugs in their different stages will be destroyed and the crop of insects will be reduced for the ensuing year.

Approved:

JAMES WILSON,
Secretary of Agriculture.

WASHINGTON, D. C., *July 1, 1908.*

¹ See Cir. 31, Div. Ent., U. S. Dept. Agr., *The Striped Cucumber Beetle*, pp. 4-7.
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